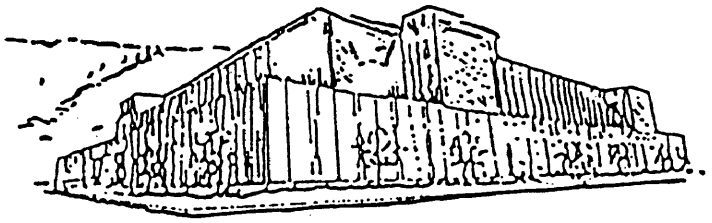
1994

Down the Clark Fork- A River Rebounds

Murray Carpenter
The University of Montana



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DOWN THE CLARK FORK -- A RIVER REBOUNDS

by

Murray Carpenter

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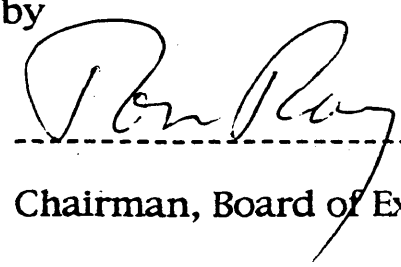

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by

Murray Carpenter

on the Clark Fork River

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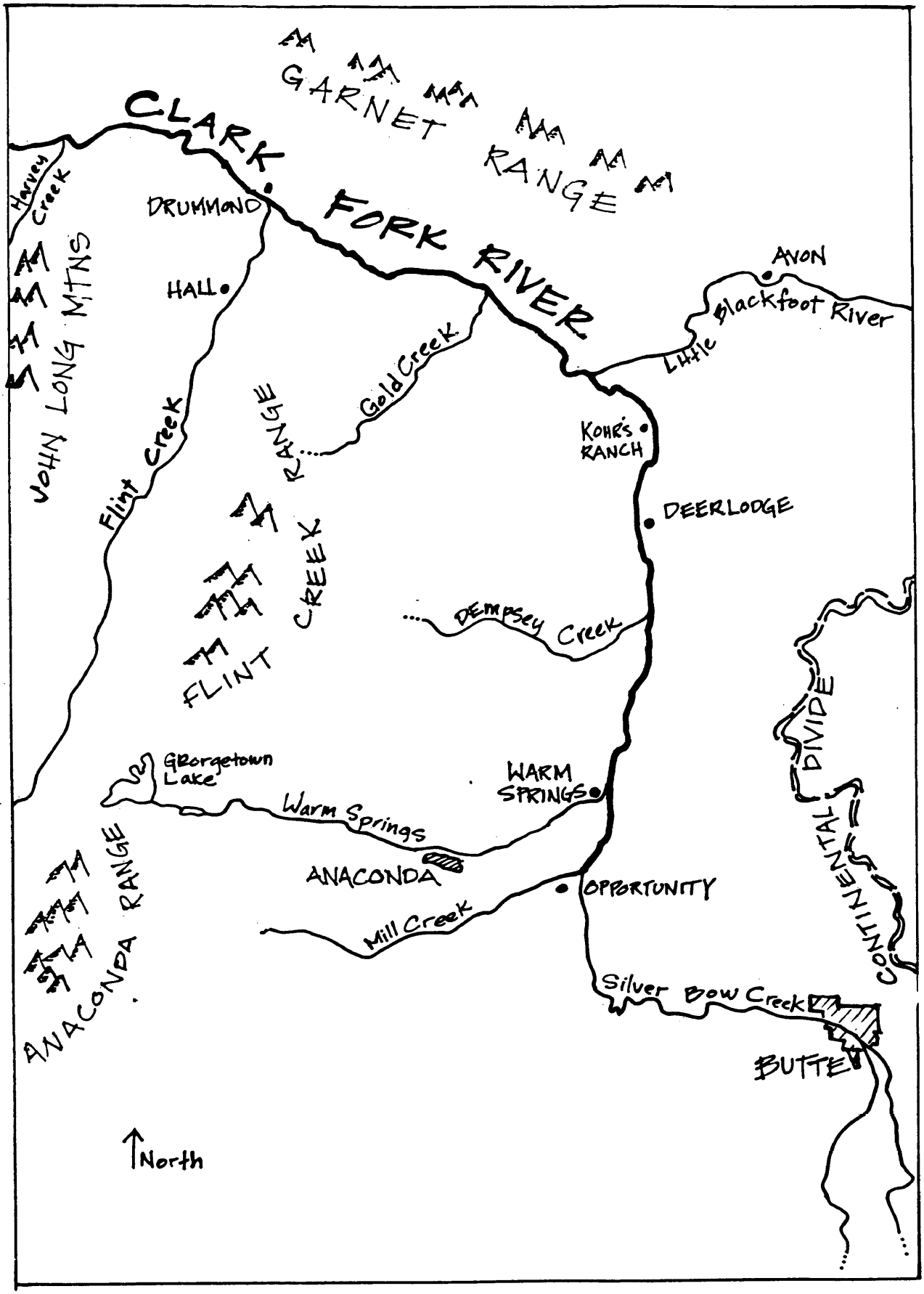
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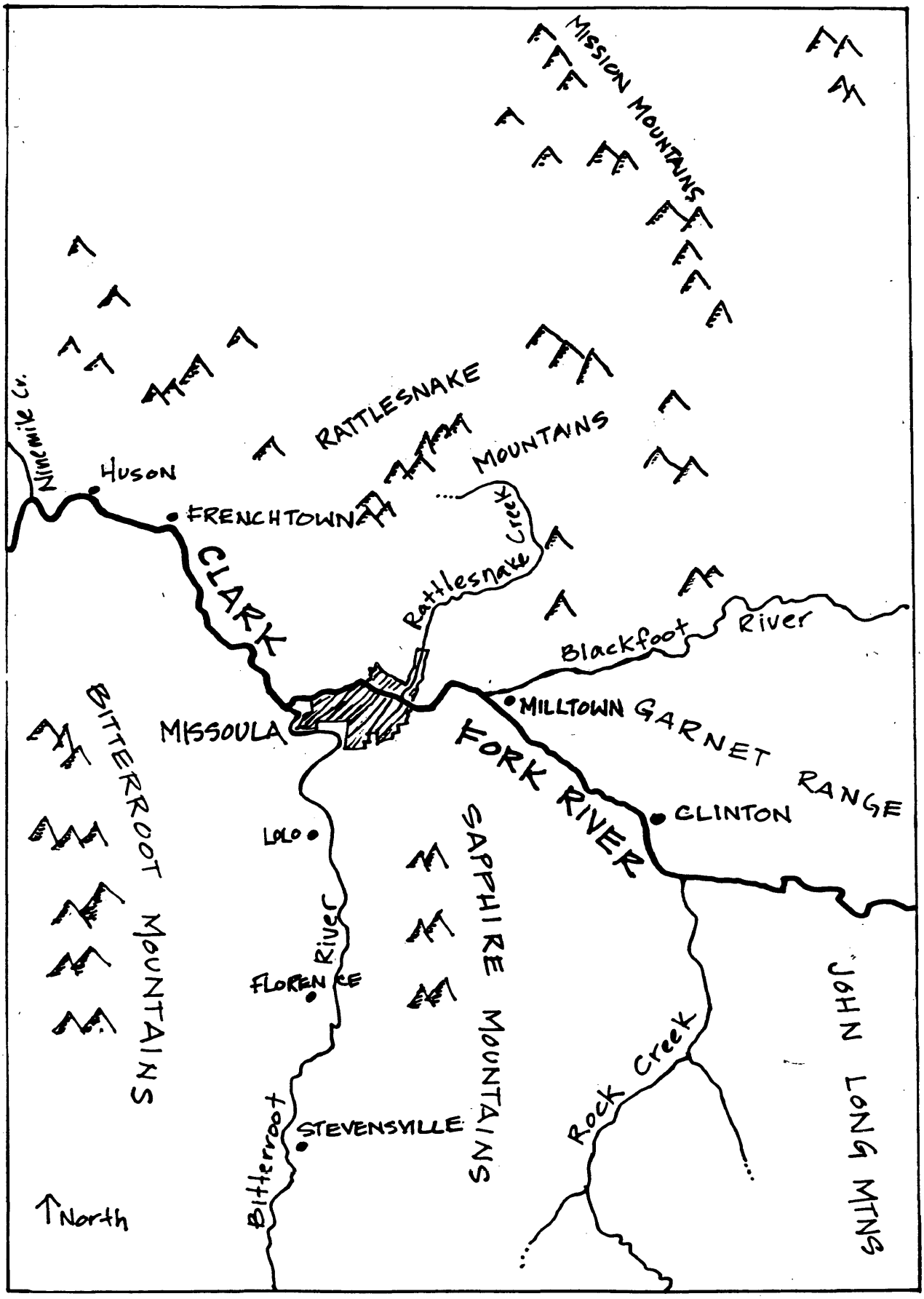
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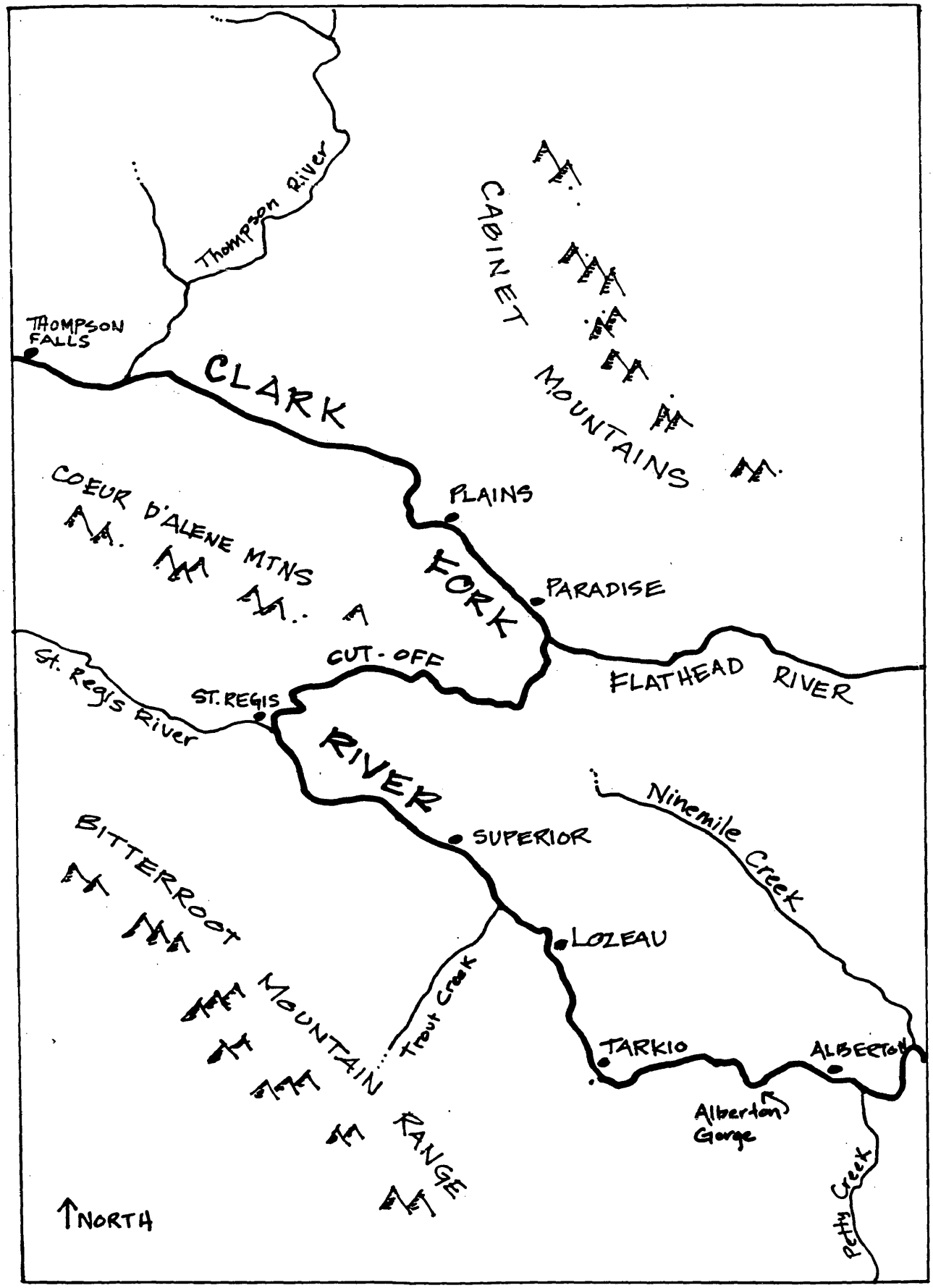
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INTRODUCTION

Ask a group of Montanans what Montana's largest river is and they'll probably tell you it's the Missouri. Tell them you floated a Montana river and caught a huge brown trout, they'll think of the Madison or the Yellowstone. Tell them a bear swam across the river in front of you and they'll guess that you were floating the Smith. Although you could have been floating the Clark Fork, it just doesn't leap to most people's minds. But ask them what the most polluted river in Montana is and they'll probably respond quickly -- the Clark Fork.

True enough, the upper 100 miles of the river has been declared a federal Superfund site due to metals pollution from mining. The river also suffers algae blooms most likely caused by nutrient rich sewage treatment plant effluent. And sometimes in the summer the upper river is so low that you can walk across without getting your shins wet because its waters are diverted to irrigate hay and pasture. Yes, the river has problems.

But the Clark Fork is a great river, a one-of-a-kind river in a land laced with rivers. The Clark Fork is Montana's largest river, with an average annual discharge of 22,360 cubic feet per second. The river drains almost the entirety of Montana west of the divide (with the exception of the Kootenai River drainage in extreme northwest Montana) and part of Idaho's panhandle, an area of over 22,000 square miles. The Clark Fork runs for 340 miles from Warm Springs near Anaconda to Lake Pend Oreille in Idaho, flowing free and undammed for most of 270 miles. Much of the river's journey is

through beautiful country, handsome if not pristine, abundant with fish and wildlife.

Given these rare qualities, why are there not more passionate advocates for Montana's largest river? Why is it so much easier to generate citizen involvement for issues involving famous Clark Fork tributaries such as the Blackfoot and Rock Creek, or Lake Pend Oreille at the river's terminus in Idaho, than for issues on the mainstem Clark Fork? Why do hundreds of people turn out for wilderness rallies and only five or ten for a meeting to discuss Superfund cleanup of the upper Clark Fork?

This story exemplifies these problems: At a house meeting in Butte discussing mine waste cleanup with local activists I met a long-time environmentalist, one of the first graduates of the University of Montana's Environmental Studies program, and a Butte resident. Throughout our lengthy discussion about the huge piles of dangerous toxins that he and Silver Bow Creek pass through each day, he had little to say, his eyes glazed over. As I was leaving he mentioned his small fishing cabin up Rock Creek. I asked if he knew about a small mining operation proposed just upstream of his cabin. He grew animated, offered his time, energy and some money to ensure that this mine got shut down. Despite his apparent lack of concern about cleaning up Butte, he was wild to preserve the existing high water quality in Rock Creek. The placer problem struck him as finite, not overwhelming. And he is passionate about Rock Creek.

I think this story clearly demonstrates three reasons we don't have more Clark Fork advocates: 1) it is much easier to think in terms of preservation than restoration. Preservation is often black

and white -- forests versus clearcuts -- but restoration is often sketched in shades of gray -- incremental cleanup of a no longer pristine river. 2) The enormity and complexity of the Clark Fork's restoration overwhelms people to the point of inaction. 3) Because it has been tarnished for much of this century, there is a lack of passion for the Clark Fork, and passion is essential to any sort of activism.

Building a stronger cadre of advocates for the river means publicizing the Clark Fork's beauty; presenting its problems in a clear, real, but hopeful light and making a good case for its potential recovery. This paper is my effort to do this.

After studying the science and politics behind the river's problems for two years, I spent eighteen days during the summer of 1993 floating the Clark Fork from Warm Springs to Thompson Falls. I saw a river that is recovering in spots, abused in others, sometimes spectacular and always interesting. My trip and thoughts follow.

WARM SPRINGS TO THE LITTLE BLACKFOOT RIVER -- *Beauty and the Beast*

The strongest impression of this upper river is the contrast between life and death, health and toxicity. Songbirds -- yellow warblers, cedar waxwings, marsh wrens, and chickadees -- fly through the willows. Red tailed hawks scream and hunt nearby, marsh hawks fly low in their harrying flight, and ospreys hover in search of fish. Beavers and muskrats splash off the bank as our canoe approaches, and tan caddisflies and small yellow mayflies bounce on the water. Tremendous numbers of wildlife species live among riparian areas, those narrow ribbons of lush growth along streams, rivers, and lakes, and the banks of the Clark Fork are no exception.

The Clark Fork is formed at the confluence of four creeks -- Mill, Willow, Warm Springs, and Silver Bow -- which drain the high arid valleys below the divide around Butte and Anaconda in western Montana. The river here has a character familiar to westerners, typical of high elevation rivers. The channel is narrow, extremely sinuous, and willow enshrouded. There are no cottonwoods along the banks, and actually few trees of any sort in the broad valley bottom. The hills flanking the valley are dotted with junipers no more than fifteen feet tall. The dramatic, snow-capped Flint Creek mountain range to the west is well timbered along its flanks, although corporate loggers have left telltale mile-square checkerboard clearcuts here and there.

Although Indians reportedly camped near the banks of Silver Bow Creek to harvest bull trout, the creek has been a virtual biological desert since Butte mining began in the late 1800's[1]. Scientists were astounded when a sucker was spotted finning upstream last year, perhaps the first documented fish sighting in Silver Bow Creek this century.

Paddling down the first few miles of the river you might not notice the damage to the Clark Fork immediately. On a few cutbanks you can see the blue strata of metals salts from old river-deposited mine wastes. But it seems a normal river until you get out of the boat, beat a few yards back through the thick streamside willow and alder and see acres of wastelands. Barren, buff and blue-green colored toxic areas called slickens cover the ground, absolutely devoid of plant growth. The slickens are metals-rich sediments washed down from mining and smelting centers in Butte and Anaconda. Most of the sediments are tailings, the flour-like residue from milling ore to extract metals. Tailings almost always contain trace quantities of the metal that was being mined (predominately copper in Butte) and also other metals that occurred along with the mined metal, often not in mineable concentrations. Now these visible slickens extend from Butte along Silver Bow Creek to below the confluence of the Little Blackfoot and the Clark Fork at Garrison. And the banks contain river-deposited metals pollution in diminishing concentrations all the way to Milltown. The vastness of the toxic

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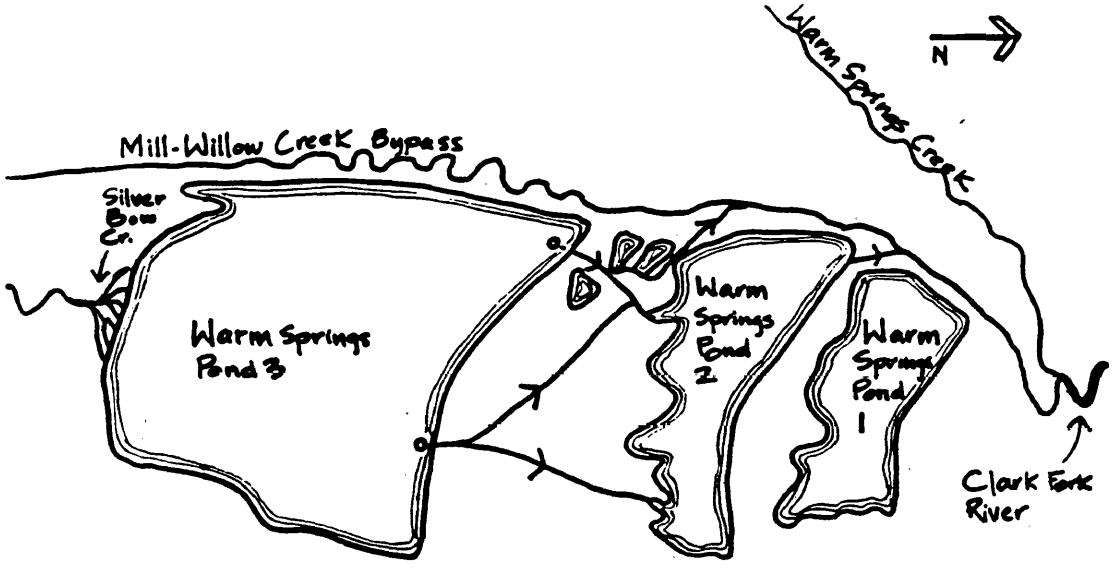
1 The one reference I've seen to the Indian bull trout camp was in *The Clark Fork Watershed Education Project,* published in 1991 by the Missoula County Conservation District, 1991. My phone conversations with two of the several contributors to the document did not turn up the original source of this information.

deposition is unbelievable, yet here, adjacent, is the clear, healthy looking river.

Another hint of the mining-caused damage is found just above the confluence creating the Clark Fork. If you look over the dikes that artificially define the east bank of Mill and Willow Creeks above their confluence with Warm Springs Creek, you notice three huge settling ponds fed by Silver Bow Creek -- the Warm Springs Ponds. The first of these ponds was created by a small earthen dam in 1911. Butte copper mines were going gangbusters, and the water draining the mines and flowing into Silver Bow Creek was laden with metals-rich mine waste -- overburden, smelter waste, and tailings. Silver Bow Creek became so toxic that it poisoned the entire Clark Fork River below. Even the relatively clean flows of Mill, Willow and Warm Springs creeks didn't dilute the toxins sufficiently. So the first pond was constructed to settle some of the toxic sediment out of Silver Bow Creek before it joined its sibling tributaries. Two more ponds were added upstream of the first, one in 1916 and the next in 1959.



Lime is added to the waters of Silver Bow Creek as they enter pond three, raising the pH to nearly neutral levels (metals are generally less soluble at near neutral pH). The neutral pH encourages metals to precipitate out, and the pond's still waters allow sediments to settle. Sulfides produced in the anaerobic conditions in the sediments (which are rich in organic matter) immobilize the metals. The metals are expected to remain immobilized in the sediments until they are exposed to a change in redox conditions or pH. ARCO has argued that the ponds are a good, inexpensive, low-tech treatment facility. But the ponds don't always work well. There are persistently high levels of copper in the ponds' discharge, especially in the winter and spring.

Most of the mining in Butte had stopped by 1977 when the Atlantic Richfield Company (ARCO) bought the Anaconda Copper Company, and inherited the liability for pollution caused by over a century of mining. Now, under federal Superfund laws, EPA is trying to get ARCO to clean up the mess it purchased.[2] ARCO is gaining ground in its efforts to promote "institutional controls." This is a fancy expression for a simple process -- leave the toxins where they are and try to immobilize them to minimize the danger of human exposure. ARCO and EPA have agreed on this sort of cleanup for the oldest of the Warm Springs Ponds, a pond that is no longer part of the water treatment system. And the other ponds have recently had

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2 The Superfund is a fund created by federal legislation entitled the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). CERCLA directed the EPA to identify, prioritize and cleanup hazardous waste sites, paying for cleanup costs from the Superfund, then recouping those expenses from the responsible parties. It is confusing that many refer to CERCLA as the Superfund act -- Superfund is one part of CERCLA.

their banks enlarged and reinforced, supposedly to withstand the maximum probable earthquake and 1/2 the probable maximum flood.

Critics, notably the grassroots river watchdog group called the Clark Fork- Pend Oreille Coalition, have argued that there is no worse place to leave the metals than in the valley bottom where a major flood or earthquake, or even the long-term erosive power of water, could put the metals back in the river. They assert that moving the metals to a drier area -- out of the floodplain and further from groundwater -- makes more sense in the long run.

The river appears to be fairly healthy in this uppermost reach. But as the Clark Fork flows through the slickens it picks up more and more metals. Trout populations give some indication of where the metals are the biggest problem, according to Glenn Phillips of the Montana Department of Fish, Wildlife and Parks (MDFWP). The first few miles below the ponds hold the highest densities of trout in the entire river, since the pond discharge is relatively low in metals. But trout numbers drop off quickly downstream, as the river picks up metals from the banks. Trout numbers rebound slightly only where clean tributaries provide dilution.

If you were to fish the upper few miles of the river you would probably be pleasantly surprised. Recent MDFWP counts indicate that 1500 trout per mile live in the first few miles below the dam. This compares favorably to some of the most productive waters in Montana. Imagine what it would be like if we clean it up.

The dense riparian belt of willow, alder and rose in the first four miles of the Clark Fork is the healthiest of any I've seen on similar Montana rivers. It is so sinuous and overgrown that my wife and I fight to keep the boat out of the willows on the outside of the sharp curves. Once, we fail. Drifting into the willows on the outside of a bend I reach for a big cross-draw just as she reaches for a draw in the stern and we both lean away from the willows at the same time. The canoe rail dips in and we fall out. It is refreshing to bob along beside the canoe until we can pull it into a small eddy in the willowed bank. Luckily it is one of the hottest days of the summer, the temperature pushing ninety-five.

Paddling becomes much easier as we float out of the state land onto private grazing land. The river straightens and broadens, the banks trampled and denuded. Unstable slickens, de-stabilized by the high flows, calve into the river. We float by some makeshift rip-rap, huge rolls of old barbed wire fencing laced with orange baling twine, the river upstream and down cow- trampled. People enjoy the river in this reach despite the often graphic pollution. Just below the rip-rap we float under a low bridge where two young ranch hands sit in soaking wet jeans after swimming. And not far below the bridge we pass a Buick with a small trailer-camper parked within a foot of the cutbank, with a little table and lawn chairs set up nearby.

We float by some new houses built onto a raw bank with horses grazing right down to the river. These are medium-large log houses built just atop a steep, raw riverbank. Good views of the river and the Flint Creek range in the distance. But there is almost no vegetation between the houses and the river. The homeowners

are already nervous and have asked Wayne Hadley of the Montana Department of Fish, Wildlife and Parks how to keep the river from encroaching on their houses -- he said, "Move them back about fifty yards."

We pull out above the Sager Lane bridge at a large diversion for a ditch that belongs to Montana State Senator Tom Beck. This ditch sometimes diverts practically the entirety of the Clark Fork's flow. In May 1992 the flow was measured at only 6 cubic feet per second below this ditch. By contrast, the river was pushing 450 cfs when I floated near the end of June. I just happened to pick a good water year to float.

Tom Beck is one of the upper river irrigators on the Upper Basin Steering Committee, a group of ranchers, sportsmen, and conservationists formed by a bill in the 1991 legislature that also closed the upper Clark Fork basin to further water appropriation. The group is trying to develop a consensus solution to the consistent de-watering problems in the upper river. Although the group hasn't yet solved the problem, they are still talking, and "the decibel level has come down", according to Bruce Farling of the Clark Fork - Pend Oreille Coalition. Some of the solutions they are discussing are more efficient water distribution systems, more water storage, and water leasing for instream flows. Perhaps the most important thing is that this disparate group is talking, trying to establish common ground. Their mission is tremendously important -- without resolving the water supply problem, the rest of the river restoration efforts will be moot.

A few days later I resume floating at the Sager Lane bridge, this time in one of two rubber rafts on an EPA-organized float. We stop along the way to look at a slickens area and discuss an ill-conceived cleanup project. After a fish-kill in 1989 (a recurring problem -- late summer thunderstorms wash streamside metals into the river, killing fish), ARCO got permission from most of the landowners between Warm Springs and Deer Lodge to build berms along either side of the river in the slickens areas. The idea was to prevent metals-laden runoff from these areas during rainstorms. It is hard to tell if that is an effective strategy. It is clear that there was a bad side effect from this project. Some of the ranchers along the upper river swung a deal with ARCO -- they would allow ARCO to berm their property if ARCO would, while there, remove the acres of willows along the river bottom in order to give the ranchers a bit more grazing land. The willow removal had a tremendous de-stabilizing effect on the river, allowing metals-laden banks to cave in and temporarily destroying the natural hydrologic course of the river. Hasty decisions, even those that are well intended, sometimes backfire.

Toward the end of the float in Deer Lodge we pass a teen in jeans, a windbreaker and a baseball cap, spin-fishing from the bank. Later he walks past us at the take-out carrying two large, gutted, brown trout on a stringer, he's a far cry from the anglers of the Yellowstone area who look like they walked through an Orvis store and everything just stuck to them. The kid reminds me of Bruce Farling's assertion that the Clark Fork is a working class river, an

abused, hard-working river driving westward and growing tough brown trout for local anglers.

Below Deer Lodge, the river is braiding -- splitting into smaller channels among little islands and bars -- and overhung in spots with beautiful willows, alders and woods rose. Soon I pass under the very low bridge on the Grant Kohrs Ranch. The Ranch is a 1,500 acre working cattle ranch that was restored by its owners. The National Park Service bought the ranch in 1972 to develop a National Historic Site. The ranch is an interesting remnant of the frontier days. Conrad Kohrs, who bought the ranch from Johnny Grant in 1866, was typical of the men whose endeavors literally shaped the land I'm floating through.

Kohrs was a German immigrant, a butcher who'd made his money by selling meat to mining camps. His ranching business thrived and he had great financial success, also investing in mining, real estate and water rights. While mines trashed the upper river, Kohrs' diversions de-watered the river and his cattle de-nuded the banks. Yet Kohrs was also one of the most vocal of the local ranchers concerned about damage to their holdings from air pollution from the Anaconda smelter.

Given the history of intensive grazing, it seems appropriate that the river banks are still mostly raw in this stretch. But the banks appear to be recovering. The Grant-Kohrs Ranch employees want to be good stewards of their land. And it is lucky that the National Park Service has this holding on the Clark Fork. It means that the Park Service may become another trustee in the Natural

Resource Damage Claim (NRDC) that the State of Montana has brought against ARCO.[3] Both the National Park Service and the Confederated Salish and Kootenai Tribes (their reservation is in the Flathead river drainage, but the Clark Fork was part of their aboriginal grounds) have expressed interest in becoming trustees. Some speculate that this NRDC will be the biggest settlement yet. It will certainly be many millions of dollars. The state of Montana, acting as the sole trustee, has put settlement negotiations with ARCO on the fast track. They hope to reach an agreement with ARCO within three years.

Toward the downstream end of the Grant Kohrs Ranch I hear a redtail hawk screaming and look up just in time to see an osprey chase him off his perch. The river here is full of small yellow mayflies, and hundreds of swallows and nighthawks are flying low over the river catching insects on the wing. Fish rise from time to time and this surprises me because the stretch of river from Sager Lane bridge to the Little Blackfoot River is supposed to have such lousy fishing. The two trout on the teen's stringer in Deer Lodge indicated otherwise. And later I run into an excited guy fishing who says he's caught five fish right here, gesturing to the run in front of him. He says he's almost sure he just caught a bull trout, though he hadn't thought there were any in there.

Soon I hear a rustling off to my right. I look over and see a sandhill crane running downstream at 10 o'clock. His head is low

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[3] The Natural Resource Damage Claim is a component of CERCLA geared toward compensating affected parties for the injury to, destruction of, or lost use of a resource that has been damaged by pollution. A simplified explanation is that Superfund should clean up the metals pollution, and the Damage Claim should pay for the lost use of the resource while it was impaired, and for any difference between the original and restored conditions of the resource.

and outstretched in front of him, his wings fully extended at his sides, dragging through the grass, rustling. He runs along next to me for quite a while, finally stopping to hide behind a clump of willows. And great blue herons are everywhere. Practically every corner I come around I see one lift off with a primordial squawking. I also see lots of songbirds, especially grosbeaks, cedar waxwings and yellow warblers. I float past a vertical seven-foot-tall cutbank entirely perforated with bank swallow nests. A mourning dove sits on a wire, the cattails are full of redwinged blackbirds, and a family of mergansers fishes in the shallows.

The river begins winding among small bluffs along the benches that define the west side of the Deer Lodge valley. These high benches were the original valley floor created by glacial deposition. Over the past ten thousand years the river has carved a smaller channel through the valley. Here the banks show grazing damage. Large pipes and spring-like trickles carry irrigation returns to the river, draining the low, level fields to the east. I have an urge to scramble up the bank to see what the fields look like, but huge "No Trespassing" signs are posted everywhere. The river banks here are not as conspicuously metals laden as above, but occasional slickens and a few blue rocks imbedded in eroding banks indicate the presence of metals.

After floating for three hours in a seemingly wild area -- no cars, few houses, no people -- I begin hearing the low drone of the interstate. Soon I am floating out toward some buildings, cattle, I-90.

Fish still rise all around the boat. In spots this reach has good looking trout habitat -- undercut banks with brushy overgrowth.

And a tremendous variety of flies are on and above the water -- the small yellow mayfly known as a pale morning dun, the light colored caddis called a white miller, a dark caddis and many small stoneflies. A guy is fishing with his kid above a bridge near the Rock Creek Cattle Company. Just downstream an old guy is fishing and it looks like he has three or four fish in a gunny sack slung over his shoulder. At first I'm surprised to see so many people fishing, but then I remember that this is one of the hardest hit days of the year -- the 4th of July. Imagine what the banks of more popular rivers like the Madison, the Yellowstone, or the Missouri are like today.

Floating under a cottonwood I hear a whooshing sound and look up to see an immature bald eagle flying away, and just then a huge, mature bald eagle flies out of the tree, no more than fifty feet above me. This upper Clark Fork area seems to host plenty of eagles, summer and winter. Scanning the cottonwoods in the winter you will almost always see an eagle or two. The upper river and the bald eagle have a lot in common -- both were poisoned by the by-products of modern industrial society, and both are recovering thanks in part to federal regulations. Now eagles that weren't here twenty years ago feed on fish that weren't here either.

The river becomes broader and shallower near Beck Hill Road, and shows serious grazing damage in spots. Irrigation sprinklers drench the benches above the river to my left. Beyond the benches the Flint Creek Range remains cloud enshrouded most of the day.

LITTLE BLACKFOOT RIVER TO ROCK CREEK --*The River of Commerce*

Just above the Little Blackfoot River grazing impacts lessen and the riparian vegetation really improves again. In one spot I choose a side channel so overgrown with alder that it feels like a tunnel. A kingfisher flies up the tunnel screaming. And at the bottom of the tunnel I hear waves out of sight around a corner. I get spit out of the tunnel and into the waves, splash through and almost run over a pair of beavers. One slaps its tail and disappears under water, the other paddles away then turns to watch me drift away. It was beavers that attracted trappers here in the mid - 1800's, one of whom would discover gold a few miles downstream, forever changing this land and these waters. This area has long been well used -- once by Indians who used to collect flint along the river, and more recently by fur-trappers, gold miners, and road and railroad builders.

The Little Blackfoot River, really more of a creek than a river, starts up below the continental divide near MacDonald Pass and runs through a broad valley for over twenty miles to join the Clark Fork at a braided confluence. The Little Blackfoot has suffered all of the problems of the Clark Fork -- it has been mined extensively, grazed down, cut over, and drawn down by irrigation diversions. But its waters are still cleaner than the Clark Fork's and do much to dilute the metals in the river water.

That night I make camp on a gravel bar below the high water mark and set out to do some fishing. I fish for about an hour and don't catch anything but stumble across a camp in the woods about fifty yards from my tent sight. It looks like the typical hobo camp -- a hut made of scrap corrugated sheet metal roofing and plywood, a

few stumps arranged as seats and a table, an old shoe and a few empty tin cans. It seems a sensible place for a camp, tucked in among cottonwood and willow on a cutbank above the river right next to a very isolated sidetrack where you could hop on or off a train without being seen.

It is the fourth of July, and I see a solitary skyrocket just as darkness falls at nearly ten o'clock.

The next morning the skies are slate gray and spitting light rain. I lie around for awhile hoping the sun will burn through and heat up the tent. Then I linger over coffee, still expecting sun.

It stops raining and I finally break camp and start paddling downstream into the already strong wind. Just around the corner three Montana Rail Link workers stand under a railroad bridge. I wonder what they are up to since it isn't raining anymore. MRL is one of the cornerstones of millionaire industrialist Dennis Washington's empire. Dennis Washington is involved with the river all the way from the headwaters, where one of his outfits is mining copper, to Thompson Falls where one of the MRL trains derailed two years ago, dumping a load of asphalt into the Thompson River just above its confluence with the Clark Fork. This spill has been in the news again this summer when gooey asphalt began washing up downstream and it became clear that the spill had not been adequately cleaned up.

It was about seven miles west of here that the "Golden Spike" was driven in 1883, connecting the east and west sections of the Northern Pacific Railway. The railroad is hard to ignore in this

section. Above Phosphate the river runs close to the railroad and has been channelized by both the railroad and the interstate. I float along a stretch of railroad rip-rap where a few fish are rising. I pull over and cast, finally hooking a small, brightly colored cutthroat. I am doubly encouraged -- encouraged to catch a fish, and encouraged to know that the water is clean enough to support at least one cutthroat. I put the fish back.

Battling the wind to keep the canoe facing downstream I soon pass the bridge at Phosphate. Phosphate is a place rather than a town, a place where phosphate was mined until the mine shut down last spring. The natural phosphate deposits in this valley may contribute to the high nutrient loads the river carries in this reach. The nutrient load is perceived to be excessive because it encourages massive growths of attached algae, especially a long filamentous alga called *Cladophora*. This algae at times drapes the entire river bottom in a solid, bright green matt. Although some consider it unsightly and anglers consider it a nuisance, the main problem is that riverbed algae and associated life draws down summertime dissolved oxygen(DO) levels.

Dissolved oxygen is critical for aquatic life. Trout, for example, are healthiest with at least 7 ppm of DO, and once DO falls below that the fish get stressed. During the day algae photosynthesizes and DO rises, but at night, with no photosynthesis, algae respiration uses up DO. Summertime DO levels would probably be quite low even if the algae were not there. The low water in the upper Clark Fork leads to high water temperatures, and warm water cannot hold as much DO as cold water. So the upper Clark Fork has a doubly bad situation --

warm water which cannot carry a lot of DO, and abundant life on the river bed eager to compete for what little DO there is.

But you can't do a whole lot to suppress natural high nutrient levels. What you can do is control the human caused nutrients that compound the problems. These nutrients come from diffuse non-point sources such as sediment from logging and road-building, agricultural runoff, and such point sources as municipal sewage treatment plants and industrial discharges.

A recently completed federally funded study pinpointed nutrient sources throughout the Clark Fork River watershed. The states of Montana, Idaho, and Washington are now working with EPA to develop a plan to minimize nutrient loading from those sources. The one simple solution to nutrient pollution from wastewater treatment plants is a phosphate detergents ban. Since the City of Missoula banned the sale of phosphate detergents, phosphorous levels in the river below Missoula have dropped significantly. Phosphate bans in Deer Lodge and Butte, whose wastewater treatment plants are the largest point sources of nutrients in the upper river, may help.

Gold Creek meets the Clark Fork in an inconspicuous cut in the gravel bank of a cottonwood grove not far below Phosphate. If you know where to look you can see the confluence from the interstate. Gold Creek is where gold was first discovered in Montana in 1852. Over the next eighty years, miners literally turned the creek's channel inside out. About a quarter mile upstream from the Clark Fork confluence is a stretch where the creek bottom is all wood planks. And not far above that is a spot where the creek runs right

through the bottom of a rancher's feedlot, the creek just a trickle in the mud. It is surprising then that a lot of Clark Fork brown trout spawn in lower Gold Creek every fall. It seems to say a lot about how resilient, or desperate, these fish are.

Downstream from the Gold Creek bridge the Clark Fork reminds me of the Smith River, the river winding away from the road among little bluffs and cliffs. The river passes through the Wallace Ranch, a ranch known for its elk herd. During hunting season, hunters gather in a cafe in Drummond to participate in a drawing to decide who can hunt there that day. Approaching the Jens bridge I hear splashing behind me and watch a mature cow elk walking across river just upstream.

The next time I'm able to sneak a day on the river is a week later when I set out to float from Jens to Drummond. I drop my canoe off at Jens, leaving it tied under the bridge, and drive into Drummond to park and then ride my bike back to Jens. But I am unable to get within a half mile of the river at Drummond because it is the biggest day of the year there, the day of the Drummond Rodeo and parade. The entire street is lined with local trucks and RVs just off the highway. The parade features Clydesdales pulling wagons, firetrucks, a rodeo clown, show riders, and Miss Rodeo Washington. I take in the whole parade and am tempted to spend the warm, sunny day eating peanuts at the rodeo.

I pull out of town at the same time as another cyclist. But she opts to ride the interstate, as she starts up the on-ramp, I yell that she can take the frontage road all the way to the next exit. But she

stays on the interstate. And it strikes me that most people pass through this countryside as she does, staying on the interstate, missing most of the local flavor, and only glimpsing the river in its least attractive reaches where it has been straightened and rip-rapped along the highway.

By the time I ride the shuttle, there are two rigs at the put-in, they look like outfitter's trucks. People are starting to guide along this stretch despite the unimpressive numbers of trout. Rumor is that the trout that are here are big fat brown trout. And the word must be getting out, because just as I stash my bike and head over to my canoe, a couple of fisherman in a truck with vanity plates 1DRFTER, park and start wading downstream.

I set off downstream, too. A pair of mountain bluebirds chase each other across the river in front of the canoe and soon I hear a racket from a cottonwood grove to my right. I look over and see a heron rookery, the ungainly birds squawking and circling their nests. A red-tailed hawk above a hay field begins screaming, and not far below I see a prairie falcon whizzing across another field and a flicker flying through some cottonwoods.

A few miles downstream I stop to relax in the sun and write, and I step right into a patch of wild strawberries that are far and away the plumpest wild strawberries I've ever seen. The day is warm and sunny and my first windless day of floating. I start to regret not bringing bug dope and sunscreen. I fish for a while, swinging a streamer against a tall cutbank. A big brown trout darts out grabs the streamer, swims back under the bank, wraps the leader around a root and shakes off.

The river winds through lots of cottonwoods here, braiding through beautiful riparian habitat with lots of cliff swallows nesting in the mud banks. Deep cutbanks covered with willows, alders, rose, mountain maple and snowberry are interspersed with grazed down land where the channel broadens and becomes shallow. And the shallow stretches seem to hold a lot of *Cladophora.*

The river's gradient seems to decrease here, and in spots the river reminds me of an overgrown, lush, buggy creek on my grandparent's place in Maryland where I spent a lot of time as a kid.

That evening I fish for quite a while at the Flint Creek confluence where the murky waters of Flint creek leave a brown band paralleling the greenish waters of the Clark Fork. A bald eagle watches from a cottonwood as I dredge the bottom with a big woolly bugger and then get a solid yank. The fish is big and strong; it rolls once at the surface and I see its yellowish flank, a big brown trout, I think, getting excited, feeling better already about the brown I lost earlier. I finally land the fish, the woolly bugger is firmly hooked in the huge, fleshy lips of a three pound sucker. Later I catch quite a few whitefish in the same run, but no trout.

A pair of kids are jumping on a trampoline near the bridge where I take out in Drummond. They tell me I missed a great rodeo, the best ever, and watch my canoe while I walk toward downtown to pick up my car. Not many folks left at the post-rodeo party scene. I wonder if a lot of people hadn't skipped the rodeo to get their hay up on one of the few sunny days of the summer.

Downstream of Drummond the river lost much of its length and character to channelization when the railroads were built and lost more later when the highway came through. Channelizing is the formerly popular engineering practice of straightening a river to make it parallel a straight railway or road. Fewer bridges are required. The Clark Fork used to wind through the flat valley bottom here in broad graceful curves. The curves were cut off, creating artificial oxbow lakes, and a straighter, faster river with rip-rap banks and few streamside shrubs. From the floater's perspective, the river looks raw. But the most dramatic perspective is from above. Aerial photographs, or a window seat on a flight to Bozeman, show just how much of the river has been cut off.

One of the worst effects of the channelizing in this section is the devastation of the riparian vegetation. It is impossible to over-emphasize the value of streamside plants. The grasses, shrubs and trees that line most undisturbed rivers serve many beneficial functions. Overhanging branches shade the river, keeping it cool in summer, and providing overhead cover so vital to protect fish from predators. Streamside plant roots anchor the banks, stabilizing the water course; streamside grasses filter out stormwater runoff and trap sediments during high water flows, cleansing the river and building rich river-bottom soils. This vegetation provides important bird and wildlife habitat; and dead streamside trees that fall in the river become the "large organic debris" so favored by trout.

The channelization, combined with low summertime flows, heavy algae growth and residual metals contamination has made this stretch of river less attractive for recreation and less hospitable to

fish. This stretch consistently holds the lowest trout population in the entire river.

Despite the problems in this reach, the river is downright good looking in spots, with remnants of original riparian habitat, and some new growth in the channelized reaches. I still see red-tailed hawks, osprey, great blue herons and lots of little brown birds. At one spot I hear a quiet slurping sound next to the boat. I look over and clearly see a nice-sized brown trout swimming back to the depths after eating something on the surface.

I camp on some state land just above the mouth of Harvey Creek -- one of the few potential trout spawning streams in this stretch of river. MDFWP is considering a project to rehabilitate the lower stretch of the creek to allow successful spawning. This would be an expensive project, and it is hard to say how successful it would be. You would probably get a few more trout into the river, but they might not fare well there because of the consistent water quality problems. Money for this and other stream re-hab projects could come from the Milltown Dam mitigation money (more about this later).

As the sun sets that evening a couple with a young daughter park downstream and fish quietly until dark.

The next morning is sunny and a golden eagle is soaring above a rocky ridge across the river from camp as I set off downstream. Not far below Harvey Creek I float into a strange looking set of meanders which I've seen from the highway. This was a novel attempt to mitigate for the loss of river channel length when the

interstate came through -- the highway department constructed a series of artificial meanders. These meanders are conspicuous to the floater because the banks are all rip-rap, made of large angular blocks of stone. The channel is essentially armored on either side. Although the river is sinuous here, it is fixed, locked in place, without the areas of freshly deposited alluvial soil that many riparian plants need. And now, almost thirty years later, the banks of these artificial meanders are nearly devoid of riparian shrubs. Most modern stream enhancement projects are done with a lighter hand.

Below the meanders the river channel is indistinct in spots, damaged by grazing, and junk is piled here and there along the banks. I soon pass the Chalet Bearmouth, which is hard to miss from the highway or the river. This is one of the Montana businesses that follows the age-old dictum that if you put enough big gaudy signs along the interstate, you'll suck in tourists like a Hoover.

Past the Chalet, the river dips under the highway and quickly dumps me into a big set of waves. I back-paddle frantically, thinking about how cold I already am, not wanting to swim even one little bit. I splash and flail, my paddle churning. The boat doesn't swamp, but takes on a lot of water. I start bailing and then notice a mature bald eagle watching from a cottonwood snag. It seems to me the eagle is chuckling, watching another clumsy human struggling against the elements.

Once the river moves south of the highway, the riparian vegetation improves. My guess is that the railroad rip-rap having been laid nearly eighty years ago, has had time to grow some shrubs.

The hills come down steeply on the south bank of the river and they don't look like they are often grazed by livestock.

This section, especially from Bonita to Rock Creek is a pretty stretch to float -- the river has left the interstate again, tall cottonwood groves grow here and there, and the hills come right down to the south bank. I don't see anyone on this stretch. My guess is that more people would float this section if the fishing was better. Some of the new sampling data that the state has gathered for the Natural Resource Damages Claim show that this reach has the third highest trout population in the upper river, behind the Warm Springs reach and the reach from Rock Creek to the Milltown Dam. So it may become a more popular float-fishing stretch.

Just above Rock Creek the second thunderstorm of the day meets me. I pull over under the Rock Creek Road bridge and write while the wild storm passes with great gusts of wind, huge raindrops and loud crashing thunder.

ROCK CREEK TO THE BLACKFOOT RIVER –*The River Recovers*

I stop at the Rock Creek confluence where I filter some creek water to fill my bottles. This confluence is in plain view of the highway, a handsome, mostly-level meadow bounded by hills on the west, the road on the east, and the Clark Fork on the north. This chunk of property was recently subdivided and a huge hand-painted plywood "For Sale" sign was nailed to a riverbank cottonwood. The Rock Creek Advisory Council was able to prevent the development of this prime property. The Council is a group formed to protect the land in Rock Creek with over a million dollars of mitigation money from the Bonneville Power Authority for a conspicuous power line that BPA routed through the lower creek. The Council was able to put a protective easement on the property at the confluence, restricting most future development, and found an out-of-state buyer. Quietly, and without much controversy, the Advisory Council has bought and swapped land throughout the Rock Creek drainage, assuring that at least some of the area is protected in perpetuity.

Rock Creek's relatively cool, clean waters are critical to the Clark Fork's health. Not only does the Clark Fork get warm in the summer because it is frequently so low, but it also gets some thermal input from warm springs in the reach above Rock Creek. The most conspicuous warm spring is Nimrod hot springs across the interstate from the river a few miles up, where you can often see swimmers as you drive by. So the cool, clean water is welcome. Rock Creek's dilution of the metals in the Clark Fork river water is considered a major factor in the rebound of the trout population below the Creek.

Rock Creek is a world famous trout stream, especially popular during the salmonfly hatch in early summer when trout gorge themselves on two-inch long stoneflies and even neophytes can catch big fish on dry flies. The Creek is less well-known for its bull trout population. This is one of the Clark Fork's last strongholds of this threatened fish which is dependent on cool, clean water.

Rock Creek is threatened, too. As recently as 1992, the Forest Service, which manages the vast majority of the land in the Rock creek drainage, planned to put over 60 million board feet of timber up for sale over the next ten years. Conservationists were furious that one of the few major drainages to escape massive environmental damages would soon be placed on the chopping block. The Forest Service held a couple of public meetings and decided to postpone the sales pending a system-wide analysis of the drainage.

Other threats loom. Many of the small creeks in the watershed are under the scrutiny of miners, from small placer miners to large corporations. Right now the mining scene is fairly quiet. A few old, unreclaimed mines still pollute the creeks in some areas, and a dig-your-own sapphire operation adds sediment to the West Fork.

Grazing in riparian areas is another threat to water quality in Rock Creek. The Clark Fork - Pend Oreille Coalition urged the Forest Service to make some changes on one of their grazing allotments thirty-five miles upstream after cow-trampled banks started calving into the creek. The Forest Service responded by phasing out the grazing permit over five years and organizing a stream bank restoration project in conjunction with the Missoula chapter of Trout Unlimited. Trees were cabled to the bank to buffer it from high

flows and to collect sediment, and willows were planted to re-establish some riparian vegetation.

Rock Creek is also threatened by sewage effluent from houses with drainfields. In short, Rock Creek has nearly all of the problems that face the Clark Fork, but on a much smaller scale. So far the creek has retained relatively clean water. It really deserves protection, both for its own sake and for its value to the Clark Fork. The most important concept in watershed protection is that you cannot protect a river without protecting the tributaries.

A short piece below Rock Creek I find an excellent campsite on an island. As I drag the canoe up into the willows I surprise three white-tail deer which splash across the back channel and scramble up the steep scree slope on the south hill. The island is beautiful -- tall willows all around the perimeter and young cottonwoods all through the interior, a beaver lodge in the back channel, and the scree slope and an adjacent cliff beyond. I fish for awhile in the back channel, catch a small cutthroat and watch a beaver swim around just at dusk.

No more rain falls during the night, but in the morning the island is still sodden from yesterday's rain. I put my tent in a windy spot in the middle of the island, hoping that it will dry while I'm drinking coffee. The valley is beautiful in the morning, with clouds floating around in three distinct layers, high clouds, ridgetop clouds, and valley clouds hanging just above the river. Every now and again a hole lines up between the three and I catch a patch of blue sky. I sit writing on a huge old cottonwood trunk and watch three garter

snakes come and go. But soon it begins raining again and I put the tent away wet, pack up and head downstream.

Below Clinton I spot a bank that I helped to re-vegetate last year. The land owner had agreed to fence his cattle off the bank and the Westslope Chapter of Trout Unlimited lined up volunteers to plant willows along the raw, eroding bank. It was fun, and the project made me a little bit optimistic. As more landowners realize the value of healthy riparian shrubs to water quality, wildlife and bank stability, more will either passively protect these vital areas by fencing out livestock, or actively work to protect these areas, by re-planting them with native vegetation. Now, viewing the site with a critical eye one year later, the project appears to have been only a moderate success. It looks like some willows took, but it is not yet a dramatic improvement.

It would be hard to tame the river in this stretch anyway. The river braids a lot here through big, healthy stands of old cottonwoods – lots of cottonwood snags and cottonwood downfall in the river. The channel is migrating all around, pushing up against the hill, then winding north into the flat valley bottom. I see three pileated woodpeckers on a cottonwood snag. And just downstream I see an ouzel doing the ouzel-bob on a rock at water's edge.

This stretch feels fairly wild in spots, the river mostly stays back away from the interstate, and few houses are in sight. I fish for a while, drifting a hopper along beside the canoe, and hook a small rainbow as the fly drifts under some overhanging alder. Once, during the salmonfly hatch, I caught a rainbow, a cutthroat and a brown trout from the same run along here.

Towards Turah the river has been channelized by the railroads, and you pass close by the interstate. A couple of old guys are bait fishing from lawn chairs below the Turah bridge. They proudly hold up a stringer of three fat brown trout as I drift past.

As you approach Milltown, the channel begins braiding extensively through a wetlands area. Thousands of birds use this area, some nesting here, and many migrating through in the spring and fall. An osprey flies over screaming and carrying a large fish. The wind is calm and as I float into the upper end of the Milltown Reservoir, everything is the picture of abundance and health.

But all is not well here, this area is thick with toxins. All of the metals-laden sediment from the Butte area did not disperse along the stream banks in the upper river. Much of it was carried along during high flows, to settle out in the first really slow spot. The Milltown Reservoir is just that spot. The dam was built at the confluence of the Clark Fork and Blackfoot Rivers in 1906 to power the Milltown sawmill. Ever since, the reservoir has been filling with sediments deposited by the two rivers. Much of the sediment is metals-rich material that moved down from the upper Clark Fork. Now the reservoir holds over three million cubic yards of metals-contaminated sediment. A continuous debate rages over what to do with the metals. ARCO has the same opinion about these sediments and those in the Warm Springs Ponds -- leave them where they are.

Nearly as large as the Clark Fork, the Blackfoot River is yet another source of relatively cool, clean water. But the Blackfoot suffers from some of the same problems as the Clark Fork, although to a lesser extent.

The headwaters of the mainstem Blackfoot are in a highly mineralized area called the Heddleston mining district. Turn of the century mining here left a morass of unreclaimed mine sites. One is so graphic that it has become a poster child of the environmentalists urging mining law reform. This mine, the Mike Horse, features a plume of brilliant orange acidic water seeping into a creek from an adit -- a horizontal mine tunnel -- that intercepted groundwater. The area was also damaged when a tailings dam broke during high water in the mid-seventies, sending a plume of metals migrating down the Blackfoot. Now ARCO and ASARCO (the American Smelting and Refining Company which is also planning an enormous copper and silver mine in the lower Clark Fork valley near Noxon), the similarly named but otherwise unrelated responsible parties, are trying to reclaim the mines as quickly and inexpensively as possible, in order to escape the bad publicity associated with the sites and the minor threat of state-enforced cleanup.

It seems ironic that this site would finally be getting cleaned up just as another mine is being planned a few miles downstream,. The mine that Phelps Dodge and Canyon Resources hope to develop about nine miles downstream will feature an open-pit nearly a mile around and 1400 feet deep. The development will also include cyanide heap-leach pads, where a cyanide solution will be trickled through the crushed ores to extract gold. There is a lot of opposition to the mine, but Montana history has shown that mining interests tend to get their way, often at the rivers' expense.

Further downstream, the river suffers from de-watering caused by irrigation and from habitat destruction at the hands of

land developers eager to cash in on the river's notoriety as the subject of *A River Runs Through It.* The river's tributaries carry more sediment than they used to, damaged by the tremendous amount of corporate logging during the go-go eighties. But there is a bright spot in the river's future -- a campaign called the Blackfoot Challenge. This is another consensus approach to river problems. The idea is to get all interested parties together to ensure that they are working toward the same goals. The players include landowners and ranchers; state and federal agencies including Montana's Department of State Lands and the U.S. Fish & Wildlife Service; conservation interests such as The Nature Conservancy, the Clark Fork - Pend Oreille Coalition and the Big Blackfoot Chapter of Trout Unlimited; even resource extracting industries including Phelps-Dodge. It is too soon to tell whether this group will do anything to protect the river, but it seems that this will be the wave of the future -- environmental protection and restoration as a discussion, rather than a pissing match. And any improvement in Blackfoot River water is an improvement in over forty percent of the Clark Fork's water downstream.

THE BLACKFOOT RIVER TO THE BITTERROOT RIVER --*The Dam, Big Fish*

Putting in below the Milltown Dam it is impossible for me to ignore two things -- earthquakes and bull trout. Maybe only a good earthquake could restore bull trout to this section of the river. Hollywood would call this *The Dam, the Fault, and the Really Big Bulls.*

Bull trout once thrived throughout the basin from Silver Bow Creek to Lake Pend Oreille. The Salish word for the Missoula area is Ntl-ai -- where there are bull trout. And the area at the Blackfoot confluence was known for having more and larger bull trout than Missoula. Flatheads used to camp here to harvest bull trout. Bull trout are native to the Columbia River drainage, including southern Canada, Montana and Idaho west of the divide, Washington, Oregon, and extreme northern California. In Montana they live in the Kootenai, Flathead and Clark Fork drainages. There aren't many bulls left, and their numbers are decreasing.

Bull trout are a sensitive species. They are threatened by competition from introduced fish, excessive angling harvest, and habitat degradation. Bulls need very cold water and clean spawning gravels, some travel over 150 miles to their spawning grounds. In many ways, bull trout, now a candidate for endangered species listing, are the perfect barometer for the river's recovery. A far-ranging fish, they need more than healthy sections of river, they need healthy river systems. This may be the least abstract way to judge the river's recovery -- the return of bull trout, from Silver Bow Creek to Lake Pend Oreille.

The dams we've built in the basin have blocked bull trout spawning runs. The huge run of bulls from Lake Pend Oreille into the Clark Fork was cut off first by Thompson Falls Dam, and later by Cabinet Gorge Dam. The possibility of middle river bulls spawning in the Blackfoot, Rock Creek, or the upper river was cut off by the Milltown Dam in 1907. Some bull trout still try to pass the dam. A pair of mature bulls, thirty-inch-long fish, died after getting stranded on the dam's spillway in June 1992. Montana Power Company has been working with the and the Montana Department of Fish, Wildlife and Parks, the Clark Fork - Pend Oreille Coalition and other interested groups to develop a plan to mitigate the dam's impact on bull trout. But all of the mitigation in the world can't re-establish the river system that existed at this confluence before the dam was built. Hence the earthquake.

The Milltown dam sits square atop the Clark Fork Faultline. Obviously the fault hasn't been tremendously active in recent years, but I wouldn't count on the dam being there forever. Eventually the fault may shift and the dam blow out. Ideally, EPA will by then have required ARCO to remove the metals-laden reservoir sediments; otherwise the metals will wash along the floodplain downstream. But the bull trout would regain spawning access to the Blackfoot River, the rest of the Clark Fork, and upstream tributaries.

Floods have everything to do with this section of the river. Floating free of the Hellgate, a tight canyon where the river winds between two mountains before emerging in the Missoula valley, you can see benchmarks high on the slopes of Mt. Jumbo to the north and Mt. Sentinel to the south (it's easy to identify these mountains, the

former sports a large L and the latter a huge M). These benches are the old shorelines of Glacial Lake Missoula which periodically inundated this whole region and receded at least thirty-six times about fifteen thousand years ago. The lake was created by an ice dam where a glacier crossed the Clark Fork at present-day Lake Pend Oreille. Glacial Lake Missoula would fill -- sometimes attaining the size of Lake Ontario and a depth of over a thousand feet in the Missoula valley -- and eventually float the ice dam away, instantly draining, sending a wall of water two-thousand feet tall rushing over eastern Washington. Then the same process would begin again. Now just the geologic record remains, and the benchmarks on Missoula Valley mountainsides.

And the Hellgate proper -- now home to the relatively tame settlement of Cobblestone Condominiums, "fish out your back door!" -- was once a feared ambush spot where many Salish perished at the hands of the Blackfeet.

Just a mile east of Missoula's downtown center Rattlesnake Creek joins the Clark Fork. The Rattlesnake enters the Clark Fork ingloriously, in its last half mile it is bounded by a concrete channel, passes beneath five bridges and a restaurant with a dining room straddling the creek, finally passing the parking lot of a new Burger King and wrapping around the Red Lion Motel to join the Clark Fork at a long bank of river cobble. Despite all of this, the Rattlesnake's mountain watershed, much of it designated wilderness, provides a constant source of cool, relatively clean water to the Clark Fork. The creek is also a spawning area for river trout, which are unable to

pass a dam a few miles upstream but seem to find suitable spawning areas in the lower creek.

The City of Missoula is growing quickly. Some urban problems will continue degrading the river as it passes through town. Many of the city's storm drains dump directly into the river, carrying sediment and oily residue from streets and parking lots. The City and the Clark Fork-Pend Oreille Coalition have painted many of the drains with a "Dump No Waste" message to discourage people from pouring toxins like waste motor oil directly into the drains. Many of the city's storm drains dump directly into the aquifer beneath town, the city's only source of drinking water. It is critical that this aquifer remain clean so that the city doesn't have to revert to drinking Rattlesnake Creek water. The creek was the source of Missoula's water until a giardia outbreak caused the EPA to require the city switch to groundwater or filter the creek water. Rattlesnake Creek's clean flows and fish habitat are too important to be depleted for drinking water.

The Clark Fork's river bottom used to look quite different in this area. The river was once broader and braiding. The conspicuous rip-rapped dikes along the banks at Kiwanis Park and below the Higgins Street Bridge are clues. The Higgins Street Bridge itself is a clue. The bridge extends for a great distance over what is now dry land. This dry land used to be a river channel that wound under the bridge until some enterprising citizens with a bulldozer blocked off the channel to create Caras Park. The river has been straightened, shortened, diked and wiered in this reach, and yet it is still a handsome and resilient river.

Missoulians can be proud that the community had the foresight to acquire a stretch of the abandoned Milwaukee Railroad line and other properties to create a riverside park system. Floating by on a summer evening you are apt to see families eating ice cream on streamside benches below the pedestrian bridge east of town, an angler fishing the run below Rattlesnake Creek in front of the Red Lion Inn, an ultimate frisbee or rugby team practicing on a riverside playing field, couples walking hand in hand along the dikes, a botanist re-planting native vegetation on the banks, an older guy on the Higgins Street Bridge fishing for whitefish to feed his parrot, seniors out for a stroll in front of their apartment building near Orange Street, and maybe a couple of transients under the railroad bridge near the old sawmill. Missoula has grown to love the river, no longer dumping untreated sewage and trash into the river as once was the norm.

Just beyond the Reserve Street Bridge, I float past the Missoula Wastewater Treatment Plant. It isn't much to look at, just an industrial looking building, a couple of ponds, and a discharge pipe. It doesn't look like the single largest point source of nutrients in the Clark Fork watershed, but it is. The plant's discharge will only increase as more houses are built in Missoula, and as existing Missoula houses with septic systems connect to the sewer system. No more easy fixes like the phosphate detergent ban loom on the horizon. One of the solutions the city is considering is land application of the effluent. In many ways this makes sense. Irrigators with ditches near to and down-gradient from the wastewater treatment plant could benefit from having the nutrient -

rich effluent to irrigate their fields. So the irrigators win and the river wins doubly -- by not receiving the effluent, and also by not losing the clean water that the irrigators would be diverting if they were not getting the WWTP effluent. Moreover, the main problems from nutrient enrichment, nuisance algae growth and depleted dissolved oxygen, occur during the summer -- during the irrigation season. Two problems present themselves: a public perception that effluent is disgusting and shouldn't be spread near people; and the rampant subdivision that is making much of the irrigated land west of Missoula, and down-gradient of the wastewater treatment plant, more valuable as ranchettes than ranches. Whatever the solution, the problem outfall from the sewage treatment plant deserves attention.

The river braids so much just before the Bitterroot confluence that it is at times a tough float. In one spot a cottonwood sweep blocks the entire channel, and as I drag the canoe around the tree I spot a flash of blue in the tree's five foot tall root tangle. It is an aluminum canoe, wrapped and ripped in twain. The State of Montana owns much of this braided area called Kelly Island. It is a favorite spot for birders, anglers and deer and waterfowl hunters. It is a beautiful, relatively undeveloped section of cottonwood bottom that I suspect looks like much of the Missoula area must have before the river was diked to allow development along the banks -- braided channel, lots of snags and sweeps, and cottonwoods of all ages. Cottonwoods don't fare this well in spots where the hydrology or structure of a river has been altered. They need to germinate in

freshly deposited alluvial soil, at the bottom of an island or point bar for instance.

It seems like a trip back in time: floating through so much development, from the dam through Missoula, and then ending up in a braiding river bottom where the river feels wild in spots.

THE BITTERROOT RIVER TO THE ALBERTON GORGE --*Big River, Big Birds*

The bottom of Kelley's Island is at the confluence of the south channel of the Clark Fork with the Bitterroot. The Bitterroot is running much clearer here (the Clark Fork is carrying some color, probably from recent thunderstorms up the Blackfoot). Below the confluence of the Bitterroot the Clark Fork looks more like its usual self, a clear green river. The Bitterroot nearly doubles the Clark Fork's flow, the river now becoming quite large. So it looks like, and really is, a much bigger river than it is above Milltown. After meeting the Blackfoot and the Bitterroot, the river's volume has nearly quadrupled in just fourteen miles.

This is a popular floating reach, many floaters putting in at Maclay Flats just up the Bitterroot and floating down to Kona or Harper's bridges. The Forest Service has produced a good interpretive map of this float discussing the river and its flora and fauna.

The lower Bitterroot receives a lot of inflow from the Missoula aquifer. The aquifer flows, more or less, from the area below the Hellgate and along the Clark Fork, southwesterly until it discharges into the Bitterroot. The water that finally reaches the Bitterroot is very rich in nitrogen, having picked up the septic effluent of thousands of unsewered homes in the valley. This in combination with the nutrient rich water flowing down from the Misssoula Wastewater Treatment Plant is a powerful combination. The river below the Bitterroot has some of the highest algal accumulation rates on the entire river -- indicating high nutrient loads and leading to

low DO levels (again, the lowest DO levels occur during summer nights).

I only see a couple of other boats on the river, both rafts with float fishers aboard. And a couple of folks are fishing down by the Kona bridge. So I'm pretty relaxed when I stop to camp on a patch of public land in a cottonwood grove on the north side of the river just above Harper's bridge. As soon as I pull up my canoe a family parks on the gravel bar across the river, unloads their big wall tent and starts fishing. Soon another trio drives out on the gravel bar above the family, sit on their coolers and start drinking. And then a group of fishermen in a large aluminum boat with a big outboard engine races upstream. They cut the engine and ram the boat onto a sandy bank not twenty yards upstream of my camp. They stand in the boat, fish for five minutes, gun the boat in reverse to pull themselves off the sand, then roar downstream, sending a big wake lapping along both shores.

In the morning I sit on a big cottonwood to write and drink coffee. It is much quieter this morning and easier to imagine early explorers floating the river. Meriwether Lewis crossed the river near Missoula on a raft on the day he separated from William Clark during their return trip in 1806. In October 1853 Dr. George Suckley of the Stevens Railroad Survey floated from the Bitterroot past here en route to the west coast. The next year Lieutenant Mullan, also of the Stevens Survey, nearly perished in a raft mishap near Missoula. And I can't help but wonder if the Kootenais, who moved into the

Flathead Lake area from the Pacific Northwest and were known for their canoeing skills, ever floated this river.

Many different birds fly around: Lewis's woodpeckers, mourning doves, cedar waxwings, swallows, nighthawks, kingfishers, great blue herons, ravens, and sandpipers. And lots of raptors -- mature and young bald eagles, red tailed hawks, swainson's hawks, kestrels, and turkey buzzards fly here. And whitetail deer wander over from Council Grove.

Council Grove is a state park commemorating a major event in the white settling of western Montana. It was here in 1855 that the Kootenai and Pend d'Oreille tribes signed the Hellgate treaty, relegating them to what is now the Flathead Reservation. A representative of the Flatheads refused to sign and they were begrudgingly granted a reservation in the Bitterroot Valley, but they too would be sharing the Flathead Reservation by 1891. The raw deal got worse -- in 1910 the Flathead Reservation would be opened to homesteading white settlers.

Just below my campsite is the former site of Harper's bridge, an old wooden bridge leading to Deep Creek on the south side of the river. Harper's bridge had been closed to vehicular traffic for many years before it finally blew out during runoff this year. A large bridge section wound up on a gravel bar a few miles downstream, a small reminder of the river's force.

It is impossible to float this stretch of river without thinking of Stone Container Corporation's Frenchtown pulp mill. The mill is obvious from the river; and even more so from the hills south of the river where prairie falcons sometimes nest on the rocky outcrops.

The pulp mill itself is a large set of industrial looking buildings, conveyors, roads and fences. And ponds. The pulp mill effluent goes into aeration ponds where biological activity is supposed to take up most of its biological oxygen demand, then into huge holding ponds separated from the river only by dikes.

According to long-time river advocate and retired University of Montana professor George Weisel, when Hoerner-Waldorf first came in to build the pulp mill, they told everyone how safe the mill would be, that it would not harm the river, that it would use "state of the art" equipment. Now we often hear that new mines cannot be compared to old mines because the new mines will use "state of the art" equipment and technology, perhaps environmentalists are doomed forever to hear this expression. George was among a cadre of activists opposed to the mill's construction. When the mill finally began operating, people found a trail of dead fish extending from the pulp mill discharge downstream. The mill found a consultant to say that the discharge wouldn't harm fish. Their own expert testimony notwithstanding, the mill was convinced to build the treatment and holding ponds.

In 1983 the mill applied for an increased discharge permit. Clean water advocates from Missoula to Lake Pend Oreille were up in arms, and loudly attended public hearings. As a result of negotiations after the hearings, the pulp mill was required to decrease its nutrient loading to the river while being allowed some seasonal increases in discharge. River advocates, heartened by the victory, decided to organize to work on other water quality issues. They formed the Clark Fork Coalition (now the Clark Fork - Pend

Oreille Coalition). The group has now grown to include over 1200 dues-paying members, and offices in Missoula and Sandpoint.

Below the pulp mill the river winds through a handsome cottonwood bottom, the channel moving among steep cutbanks, cottonwood sweeps and gravel bars and islands. Public access is limited in this area; the river feels secluded. And the area is well-known for the trout fishing -- lots of big rainbow trout and an occasional brown or bull trout.

Near Huson the interstate is visible from the river for the first time since the Hellgate. A few miles downstream I pass several houses in a small subdivision and float under the interstate for the first time since East Missoula. The river bends north here, picks up Ninemile Creek, then swings south, again passing under the highway. Ninemile Creek is a critical trout spawning tributary. Some Clark Fork River trout tagged down near the Flathead River have been found spawning in this creek, having traveled over eighty miles. The creek has some sedimentation problems, primarily from overgrazing in riparian areas. A recent Soil Conservation Service project to stabilize banks and fence out livestock should improve the creek's water quality by decreasing erosion.

THE ALBERTON GORGE TO THE FLATHEAD RIVER -- *The People's River*

From the Alberton Gorge to Paradise the Clark Fork River is well-used. Over one hundred people sometimes raft the whitewater gorge on hot summer days. The river from the gorge to St Regis is popular among floating anglers. And the St. Regis cut-off is busy with campers, canoeists and swimmers all summer long. Much of the river corridor is public land.

The Alberton Gorge is regionally famous among whitewater boaters. Not only is it a good, challenging class III and IV run during high water, but the water holds up well and boaters run it year round. Some hard-core boaters even float it in January -- the high gradient keeps it relatively ice-free.

The whitewater is one reason this trip is so popular with private floaters and outfitters who lead guided trips down the river. Another reason is the seeming wildness of this river section. Once down in the steep-walled Gorge it seems that you are miles from civilization. Only rarely can you hear the train or the interstate which parallel the river about a half mile away. At two spots the river is crossed by the railroad and the interstate. But when you are down in the Gorge it feels like a wild river. But this area is threatened by residential development. A few years ago I floated the Gorge with Peter Nielson, former river guide and former executive director of the Clark Fork Coalition. We took a map I had made showing property ownership along the gorge, to assess which areas of private land were most visible from the river. We had a fun trip, but left the map in the dry bag, it would've gotten soaked and

tattered. Although the recent construction of a couple of houses above the Gorge has renewed interest in protecting the undeveloped areas, land conservation deals have been few and far between -- no group has taken a lead role and developed a comprehensive strategy for protecting the Gorge.

Floating the Gorge reminds me of a bad interaction I had a few years prior with an avid whitewater boater and frequent Gorge floater who was involved with a local land trust. I said I hoped her group would help to protect some of the lands along the Gorge. Her response was that there are enough pristine rivers around that are worth saving, there's no point in messing with one that is so trashed. It made me furious.

The Fish Creek confluence is a popular lunch spot for floaters. The creek comes in clear blue and ice-cold. A couple of hundred feet up from the confluence is a beautiful swimming hole. Fish Creek is another very important spawning tributary for Clark Fork trout. Bull trout, among others, ascend Fish Creek annually. Unfortunately, much of the Fish Creek drainage belongs to Plum Creek Timberlands, and, like most of Montana's corporate timberlands, was logged mercilessly during the 1980's. The one bright spot in this picture is that the creek's water quality is probably past its nadir now that most of the mature trees have been harvested, and as trees regenerate, Fish Creek's water quality should improve.

Below Fish Creek the river stays in a deep, steep sided gorge for a few miles until Quartz Creek. There are some big waves in this area, but nothing like the dramatic whitewater above. It seems like another world, the flat swift river cutting through steep shaley

brown hillsides. It is so tranquil in this reach that I once saw a beaver that I thought was dead, floating in a backwater. I splashed my paddle, he looked up, sleepy-eyed and chugged away on the surface. I think he was just resting, lolling half-asleep in the water.

At Tarkio, a place not a town, a private landowner has let rafters take their boats out at his place off and on for years. The Forest Service recently acquired an adjacent property, assuring future public access. The Forest Service has been actively trying to acquire land along the Clark Fork River corridor, and could be a great ally to river advocates.

I spend the night at the state-owned Forest Grove campground, one of the few public campgrounds along the river. In the morning the camp hostess, a DFWP employee who lives nearby and maintains the campground, comes to visit. She is wearing her uniform and after a couple of minutes of small talk she says, "If you want to keep using this river then you'd better write your congressman because they are trying to make it a wild river and then only the outfitters will be able to use it. If we keep getting more restrictions then no one will be able to use it." It makes me think about how much easier it is for people to become politically active when they perceive that they are losing a privilege rather than gaining one.

Below the gorge the river has yet another, altogether different appearance. Here the river is confined to a deep, relatively well-defined channel, often fifty feet below the benches on either side. Gone are the braided channels through cottonwood groves. Here, Ponderosa Pines come down to the river's edge. From here to

Cascade Falls near Quinn's Hot Springs, the river is easy to paddle, wide open with few waves and few obstructions.

The biggest tributary in this stretch is Trout Creek, a mountain stream draining the Hoodoo Pass area of the Bitterroots where I once watched four wolverines playing all morning on a snow slide. Trout Creek has suffered the same indignities as most of the tributaries around here -- extensive cedar logging in its lower reaches, sheep grazing up high, mining throughout, a road pinching the creek in spots. This is another trout spawning tributary, but it is not used to the same extent as Ninemile and Fish Creeks.

Although a lot of folks float this section of river, you are more apt to see people drift-fishing from ten foot aluminum rowboats than Avons with rowing frames, or fiberglass Mackenzie River driftboats. I fit right in with the canoe my wife dragged home one day four years ago. Its rails were split and it had many holes of various sizes. We patched it with epoxy, fiberglass and bondo. Not the prettiest boat, but it doesn't leak and will never be stolen.

About ten miles below Forest Grove I float through the town of Superior. A quiet town now, it was once a booming center of tremendous mining and cedar logging activity.

I spend the night in a Forest Service campground at Slowey. This is the other public campground right on the river, and it has a boat ramp. As soon as I climb into my tent a terrific lightning storm begins. The flashes soon become so frequent that the inside of the tent lights up like the set of a bad horror movie. It begins raining and the rain intensifies, bigger drops coming down and soon hail. The tent flexes in the wind and I'm glad not to be camped beneath

cottonwoods, which have an unsettling tendency to drop big branches during windstorms.. Soon the thunder is so close that I stick my head out of the tent flap to watch. My head gets a good soaking but it is worth it to see bolt after bolt of lightning come down on the hills across the river. Each new bolt etches its negative image on my retinas. Within 5 minutes the storm passes and the thunder, at first crisp, like the crack of a baseball bat, becomes mottled, like far off bowling balls approaching pins.

Downstream from Slowey the river runs near the highway for a stretch, then ducks away. The Forest Service is making an effort to have this section designated a "Recreational River" in the National Wild and Scenic Rivers System. This designation is saved for rivers which are more developed than Wild or Scenic rivers (Wild rivers are mostly undeveloped; Scenic rivers are mostly undeveloped but road-accessible in spots, Recreational rivers may have roads paralleling them; all must be free and undammed). The section under consideration is from Slowey to the confluence of the Flathead River, excluding a couple of miles either side of St. Regis. Much of the river corridor in this area is Forest Service land.

Floating into St. Regis you pass the mouth of the St. Regis River. The interstate was built along the old Mullan trail paralleling the St. Regis River in the mid-sixties. There wasn't a lot of room for the train tracks, the interstate and the river, the river lost out, and was straightened and channelized in many stretches. The St. Regis was once a more important trout spawning tributary than it is today.

Some trout still spawn in the St. Regis, the last good-sized spawning stream before the Thompson River, over fifty miles downstream.

Floating beyond St. Regis you leave the interstate behind as the river swings around to the north and east for fifteen miles before joining the Flathead River. This area is called the St. Regis cut-off. Although the road and train tracks are frequently near the river, this section seems wilder than the river above, and much of the river corridor is Forest Service land. With the exception of a couple of spots where clumps of houses have sprouted like mushrooms, the cut-off is mostly wooded, and the steep hillsides beautiful.

Before long I round a huge oxbow. On the left bank, just beyond the apex of the big bend stand the remains of a huge lumber mill. The location seems ideal -- there is a truly huge slackwater pool above the mill, ideal for booming logs drifted down river. The millsite itself is conspicuously large and level and just fifteen feet above the river, high enough to avoid flooding but low enough to make it easy to haul logs out of the river. And the mill was near the railroad, the Mullan Road and the river, making lumber easily transportable to distant markets. But I spent the night here with some friends a few years ago and discovered for myself the phenomenon that shut this mill down. When we woke up that July morning, pea-soup fog was all about. After breaking camp we sat around for a half hour drinking coffee, waiting for the fog to lift. It didn't and we soon got in the canoes and floated on. Within a half mile we were in bright sunshine. Looking back, we could see the oxbow still fog enshrouded. The oxbow is almost an island,

surrounded on all sides by water, and the millsite was too damp. The logs took too long to dry, and the mill eventually shut down.

The next morning is cool and sunny, and as I float I see something bobbing through the current in the riffle below. At first I think its a moose head, then I think it is a log, then I notice distinct ears. Soon I can tell that it is a bear swimming across the river. I pull out my field glasses as the wind pushes my canoe toward the right bank, the same bank that the bear is swimming toward. The bear climbs out, entirely relaxed and looking skinny with water-matted fur, about fifty yards below where my canoe has drifted into some sedges along the shore. It is a full-grown, but not huge, black bear. It starts walking up the steep slope through a cedar grove, scrambles over some downfall, stops and sits on its haunches with its nose in the air and gets wind of me. The bear checks me out, seems unconcerned and continues ambling up out of sight into the trees.

The area where the bear disappeared is the only sizable roadless area contiguous to the Clark Fork River. The wildlife value of roadless areas is tremendous, especially these lower elevation roadless areas, of which very few remain. The Forest Service has been trying to consolidate its holdings in the cutoff by swapping lands with Champion and Plum Creek. Plum Creek owns a section right in the middle of this roadless chunk. Another threat to this area is an old mine that two Paradise area hobby-miners hope to re-open and expand. The operation has been shut down for the time being after the Clark Fork-Pend Oreille Coalition and the Ecology

Center appealed the Forest Service's decision to permit the expansion, citing water quality and wildlife impacts.

The only public hiking trail along the Clark Fork parallels the south slope of the river here, sometimes high above it, sometimes along the bank. The trail meanders along a verdant, mossy, north-facing hillside, passing small groves of large cedars. This area seems wilder yet when you consider that the beloved Ninemile wolves live just over the ridge from here. Perhaps they've visited this area in their far-ranging travels.

Past the roaring Class III Cascade Rapids you come into the most heavily used section of the cut-off, passing in quick succession a Forest Service campground, a children's camp and Quinn's Hot Springs Resort. Floating through in August I passed tubers, swimmers, anglers and two guys joy riding in an aluminum skiff with a small outboard engine. Stopping to use the phone at Quinn's I walk straight into a crowd scene. The bar is thick with drunken revelers even at two on a bright sunny Sunday, and the pool equally crowded, with a cocktail waitress wandering among the poolside throngs.

Leaving Quinn's, you float by the congestion quickly. Soon the valley opens up and you see the valley of the Flathead river to the north. A large hay meadow sits on the river right, in a triangle bounded on the north by the Flathead and the southwest by the Clark Fork. This entire meadow has been subdivided and is now for sale. I think it is one of the many parcels of land worth acquiring to prevent the riverside land from being developed.

This confluence is amazing -- the meeting of two mighty rivers. Both have traveled hundreds of miles by now, from cold tumbling, glacier-fed tributaries, through small moose-meadow creeks, down along roads and towns, finally gathering force and moving through the low, broad valleys. The confluence is dramatic, the Flathead still carrying the brilliant blue tint of suspended glacial silt, and the Clark Fork a more subtle green. The color seam gradually fades as the rivers blend, the Clark Fork becoming blue-green.

PARADISE TO THOMPSON FALLS --*The River Wide*

Floating from the Flathead confluence down to Paradise, you notice that this is yet another distinct and milder region. This area is known for its nurseries; the growing season is longer at this lower elevation.

The river here is large, wide and placid looking. Floating in the middle of the river it feels as though I am inching along, the banks distant enough that the perception of speed slows. But I find that I'm moving right along whenever I pass close to a bank. Islands dot this reach and hills come steeply down from the north.

At the tail of an island I float past a ponderosa pine grove on the south shore and see a pileated woodpecker clumsily pecking at the top of a swaying sapling. Floating past a rip-rap bank below the railroad tracks I see a lot of fish in a pool, squawfish, a rainbow trout, suckers, and one smallmouth bass, all clearly visible in the calm water. I paddle back up to the head of the run and float back through casting and stripping a big streamer. I hook a two-pound squawfish that makes one determined run and then comes in without much of a struggle. I release it. Squawfish are incredibly abundant throughout the Clark Fork. Never a very popular fish -- neither very handsome, nor tasty, nor sporty -- they have been subjected to such atrocities as the squawfish stomp by disappointed anglers. Squawfish have also become members of trout-fisher's scapegoat of the month club, wherein declining trout populations are blamed not on human-caused problems, but on predation by mergansers, sea-lions, pelicans, or squawfish. This finger-pointing often takes the place of serious discussion about habitat degradation.

Not far downstream I see a pair of buzzards in a slough. As I paddle back to investigate the buzzards fly away from their feast -- a dead sucker. Paddling back out, I spook a two-foot long northern pike. Unlike the squawfish, the pike is an introduced fish. Someone stocked some of these fish in Lonepine Reservoir at the head of the Little Bitterroot River in the fifties. Some of the fish migrated downstream into the Flathead River, where they found many sloughs and backwaters, their preferred habitat. Since then they have moved into the lower Clark Fork. They are one of the "introduced exotics," as biologists call species from elsewhere, that may indeed make life difficult for native fauna.

There are many instances of introduced fishes harming fishes native to the Clark Fork basin. Many high mountain streams have been stocked with brook trout, an eastern US native, which tend to out-compete the native cutthroats and can hybridize with bull trout. Lake trout introduced in Flathead Lake have made things hard on native bull and cutthroat trout there, and are now expanding into the Flathead River above and below the lake (at least one moved up into the Clark Fork almost to Missoula, where a surprised angler caught it). Smallmouth bass, introduced in the lower river reservoirs, are moving upstream where fisheries managers are concerned that they could displace trout in much of the middle Clark Fork and the lower Bitterroot. It is a precarious balance to maintain, and a relatively new concern. And this is not to even mention the impact that now self-sustaining populations of brook, brown and rainbow trout are having on native trout and other fishes. I pity the DFWP staffer who will someday address a Montana sportsmen's club on the need to

limit brown and rainbow trout. This is just one example of the tough choices ahead.

Approaching Thompson Falls, the hills on the north come steeply down to the river. A herd of bighorn sheep lives up on the steeps, and frequently wander down onto the highway where many are killed by cars.

The Thompson River is the last major tributary to this section of river. The drainage heads in a chain of lakes and comes south to join the Clark Fork. Much of the river's drainage is private timberlands, and much of it has been pretty well cut over. Nonetheless, the Thompson River is a fairly popular trout stream, with a salmonfly hatch annually announced on the front page of the local paper. In 1990, Champion International donated nearly 4,000 acres of the land surrounding the lakes to Montana. The state intends to develop the area as a state park. This property transfer, initiated by local rod and gun club Flathead Wildlife Inc., should help protect the Thompson River from further water quality degradation.

Approaching Thompson Falls, the current diminishes as the river pools behind the first of a series of hydro-power dams which turn the river below into a dam-controlled series of slackwater reservoirs from Thompson Falls to Lake Pend Oreille. Pulling up to the popular boat ramp on the reservoir in Thompson Falls, I try to imagine what the area looked like 184 years ago. That is when David Thompson established a post here to trade with Flathead, Kootenai, Kalispell, and Nez Perce Indians, beginning a period of rapid change in the Clark Fork basin. It is comforting to know that, in spots, the river today looks much as it did then.

CONCLUSION

I hope that this paper helps to debunk the myth that the Clark Fork is a toxic, hopelessly polluted river. The free-flowing Clark Fork is beat-up in spots, but full of spirit throughout. It is this spirit, the river's toughness, resilience, and determination, that make it a fun river to float, and an exciting river to protect. The Clark Fork would respond well to more attention from water quality advocates.

Protecting the Clark Fork is critical to all of us who live in the watershed and care about the river. River protection has everything to do with living within our means. This is the area of environmental advocacy that can teach us more about living a sustainable lifestyle than any other. On the Clark Fork it is impossible to consider the Superfund sites without considering our own metals consumption, our cars, bikes, telephones and computers. It is hard to look at the ranching related de-watering without considering our own diets and the demand for beef. Many of us are connected to wastewater treatment plants and live in growing riverside towns. Learning to protect, restore, and live alongside the rivers in this country will be a hard process, but one that, worked through, will help to solve many of the other environmental problems we face. There is no more important struggle facing this region now and in the immediate future than water quality protection. Perhaps the first step in this struggle is learning to love the rivers.

Since the Clark Fork has been branded a toxic river, many people have thrown up their hands, overwhelmed by the complexity of the river's problems. So the vicious cycle continues -- the river is polluted, people recreate elsewhere, don't get involved with

protecting the Clark Fork, and the river loses more ground. I suggest a three part approach to rectifying this problem: 1) Get out on the river, see it, float it, fish it, watch the birds and bears. 2) Use some imagination -- if the river is this beautiful now, just imagine what it could be like if we take care of some of the problems facing the river. 3) Find a niche, an area of interest in the river, and become an advocate for the river's recovery. The appendix lists groups that are working for the river, any of them could use your help.

See you on the Clark Fork.

APPENDIX: Organizations working to protect the Clark Fork

The non-profit organizations listed below are all actively involved in protecting or restoring various aspects of the Clark Fork basin. And all of them could use your help -- time and money.

Clark Fork - Pend Oreille Coalition, P.O. Box 7593, Missoula, MT 59807 (406)542-0539

With offices in Missoula, and Sandpoint, Idaho, the Coalition has been leading the charge for a cleaner Clark Fork for a decade. They have an especially strong presence on metals and nutrient pollution issues.

Trout Unlimited, Montana Council, P.O. Box 7186, Missoula, MT 59807, (406)543-0054

Trout Unlimited has many chapters in the Clark Fork basin. Although they've historically been known for their river cleanup and habitat restoration projects, they've recently taken stronger stances as advocates, and are leaders in the fight to preserve and restore instream flows.

Montana Natural History Center, P.O. Box 8514, Missoula, MT 59807, (406)243-4828

This new group is working to educate Montanans about the region's diverse flora and fauna. Among other projects, they lead many interesting field trips throughout the year.

Montana Wildlife Federation, 32 S. Ewing, Helena, MT 59601, (406)449-7604

This group has traditionally been a voice for hunting and fishing interests. This has led them to working on instream flow protection, where they've been major players in two unsuccessful efforts at legislative reform.

Alliance for the Wild Rockies, Box 8731, Missoula, MT 59807, (406)721-5420

Aggressive wilderness defenders, this group usually doesn't take a stance on non-wilderness, low-elevation issues. Their big push is to pass the Northern Rockies Ecosystem Protection Act, a regional wilderness bill. The Alliance has been pushing the feds to list bull trout as an endangered species.

Rock Creek Advisory Council, 102 E. Main, Missoula, MT, 59802, (406)728-2841

This group has been substantially bankrolled by a large mitigation settlement from Bonneville Power Authority which routed a major feeder line through the lower Rock Creek valley. They've quietly and effectively been buying easements and properties in the Rock Creek valley.

Five Valleys Land Trust, 102 E. Main, Missoula, MT 59802, (406) 549-0755

This land conservation group holds title to several riverside parcels and is aggressively seeking to protect more open space in the middle Clark Fork region.

The Nature Conservancy, Montana Chapter, P.O. Box 258, Helena, MT, 59624, (406)443-0303

Outside of a tremendous project that preserved vast areas of the Blackfoot, TNC has not had a lot of presence in the Clark Fork basin. Recent developments suggest a stronger future presence.

Montana Land Reliance, 107 W. Lawrence, Helena, MT 59601, (406)443-7027

This land conservation group is primarily interested in properties with high hunting and fishing values.

Bibliography

Clark Fork Facts and Science

The Clark Fork has been studied extensively. It would be very difficult to list all pertinent documents, so I will refer the reader to just these few. If these can't answer your questions, they should at least point you in the right direction.

Carlson, Clinton E., and Loren L. Bahls, eds. 1985. *Proceedings of the Clark Fork River Symposium.* Montana College of Mineral science and Technology, Butte, MT.

Vicki Watson, ed. 1990. *Proceedings of the 1990 Clark Fork River Symposium.*

These two compilations of presentations are great sources for original research on, and overviews of, Clark Fork water quality.

Johnson, H.E., and C.L. Schmidt. 1988. *Clark Fork Basin Project Status Report and Action Plan.* Montana Governors Office, Helena, MT.

The so-called "hojo" (after author Howard Johnson) report was an in-depth look at the river's resources and problems prepared by the Clark Fork Basin Project -- a Montana project initiated by former governor Ted Schwinden. An excellent overview of the Clark Fork, some information is now dated.

Montana Department of Natural Resources and Conservation. 1991. *Final Environmental Impact Statement for Water Reservation*

Applications in the Upper Clark Fork Basin. Montana DNRC, Helena, MT.

This report gives good river flow information and water quality data for the upper Clark Fork It also, to quote a friend, "tells you where to find moose and other cool stuff."

Thomas, Ginger. 1992. *Status Report:Bull Trout in Montana.* Montana Department of Fish, Wildlife and Parks, Helena, MT.

This reports on bull trout populations in the Clark Fork basin -- the bibliography is a good starting point for bull trout research.

U. S. EPA, Montana Department of Health and Environmental Science. 1990. *Clark Fork Superfund Sites Master Plan.* Montana D.H.E.S., Helena, Montana.

The master plan gives a comprehensive overview of the Clark Fork Superfund program, and a bibliography for the inquisitive reader.

State of Montana Natural Resource Damage Program. 1995. *Restoration Determination Plan for the Upper Clark Fork Basin.* State of Montana N.R.D.P., Helena, Montana

This document can give you an overview of the state's natural resource damage claim.

U. S. EPA, 1993. *Clark Fork - Pend Oreille Basin Water Quality; A Summary of Findings and a Management Plan.* EPA Region 10, Seattle, WA,

This documents research funded through section 525 of the Clean Water Act of 1987. A good overview of nutrient pollution in the river and lake. Includes a good bibliography of nutrient-related studies.

Regional Natural History and General Interest

Floater's guides and natural history books, these are light interesting readings full of interesting facts, but no original science.

Alt, David and Donald W Hyndman. 1991. *Roadside Geology of Montana.* Mountain Press, Missoula, MT.

This is a really interesting neophyte's guide. It does not have a bibliography, but should have nearly enough information to exhaust your curiosity.

DeVoto, Bernard, ed. 1953. *The Journals of Lewis and Clark.* Houghton Mifflin, Boston.

Great reading. It always amazes me how observant these two were.

Fischer, Hank. 1986. *The Floater's Guide to Montana.* Falcon Press, Billings and Helena, MT.

This readable guide discusses the Clark Fork as well as other river in its watershed -- the Flathead, Bitterroot, Blackfoot, and Rock Creek. Includes good detail about whitewater in the Alberton Gorge.

Knowles, Craig J. and Pamela R. 1993. *A Bibliography of Literature and Papers Pertaining to Pre-Settlement Wildlife and Habitat of Montana and Adjacent Areas.* U.S. Forest Service, Missoula, MT.

The title says it all. This exhaustive, annotated list of nineteenth century explorations and literature will save hours of digging through card catalogs.

Van West, Carroll . 1986. *A Traveler's Companion to Montana History.* Montana Historical Society Press, Helena, MT.

Although this book is based on roads and not rivers, it is worth perusing.

Various authors. 1989. *The State of the Clark Fork: Mending a River.* Northern Lights special issue. Northern Lights, Missoula, MT.

This was a product of the Clark Fork Project of the Northern Lights Institute, an effort to find common ground among the often adversarial parties interested in the river's future. The paper includes good historical information.

U.S. Forest Service. *Water: Clark Fork River Float.* Lolo National Forest, Missoula MT. This pocket map describes the wildlife and river habitat along the popular floating stretch from Maclay Bridge (on the lower Bitterroot) to Harpers Bridge. It is free from the Lolo National Forest. A good tool for people just learning about the river.

River Readings

Rivers have inspired so much great writing that it was difficult to glean just a few to include here as suggested background reading. These are all contemporary books, and all but one are based in the West.

Abbey, Edward. 1991. *Down the River.* E.P. Dutton, New York, NY.

A collection of river essays. Fun and thought provoking.

Fradkin, Philip L. 1986. *A River No More: The Colorado River and the West.* Knopf. New York, NY.

The Colorado River watershed narrated from the floater's perspective. The author also journeyed to the unfloatable headwaters of some major tributaries.

Horton, Tom. 1991. *Turning the Tide: Saving the Chesapeake Bay.* Island Press, Washington, D.C.

This is an exhaustive look at the Chesapeake Bay watershed. Using scientific data, but writing for the layperson, Horton gives some insight to the future of all of the watersheds across the country by asking -- "What can we do about the cumulative effects of the millions of small non-point sources of water pollution."

Palmer, Tim. 1991. *The Snake River: Window to the West.* Island Press. Washington, DC. Palmer takes an in-depth look at the problems facing this river whose watershed abuts the Clark Fork's along the Bitterroot Range.

Reisner, Marc. 1986. *Cadillac Desert, The American West and its Disappearing Water.* Viking Penguin. New York, NY.

A good overview of the political struggles for Colorado River water allocation.